

CHAPTER SIX

THE POLITICAL ECONOMY OF THE PRACTICE OF TAIWAN TOWARD GLOBAL WARMING

After Taiwan decides to abide by the UNFCCC, what has Taiwan done to implement the Convention? The structure of this chapter is as follows. First, Taiwan's present economic structure, energy supply and consumption situation, as well as its carbon dioxide (CO₂) emissions will be introduced. Then, related implementation policies and measures adopted by the government will be discussed and analyzed from the organization, regulation and the policy aspects in this chapter.

6.1. The Present Economic Structure, Energy supply and Consumption as well as the GHG Emissions

6.1.1. The Present Economic Structure

Taiwan's economic development after the nationalist government came to Taiwan in 1949 is commonly characterized as state-led growth. Taiwan began as an agricultural economy; the government launched an import-substitution industrial development policy in the 1950s, an export-oriented policy in 1960s. Heavy and technology-intensive industries began to develop in 1970s. After Taiwan withdrew out from the U.N. in 1971, the government promoted international trade to maintain contact with international world. Due to wages rising sharply, Southeast Asian countries' competition and NTD suddenly appreciated, Labor-intensive industries were no longer the mainstay of the industrial sector in 1980s, so the government began to direct the economic structure towards a more technology intensive- and capital-intensive one. Between 1986 and 2006: Agricultural production value dropped from 5.55% to 1.57%; Industrial production value dropped from 47.11 % to 24.99%; Production value of services rose from 47.34% to 73.44%; GDP at current prices rose from US\$76.9 billion to US\$364.4 billion; Per capita GDP increased from US\$3,974 to US\$16,030; Foreign trade jumped from US\$64.0 billion to US\$426.7 billion. The current production

structure of Taiwan is very similar to those of many industrialized countries. Over the past twenty years, Taiwan has become one the world's top manufacturer and exporter of high-tech products, such as computers and other IC products⁸⁹.

6.1.2. Energy Supply in Taiwan⁹⁰

Taiwan's energy supply mostly depends on import⁹¹. In 2006, indigenous energy only contributed 0.07%, and imported energy occupied 99.3%. Classified by energy supply form, coal contributed 32.4% in 2006, oil constituted 50.54%, LNG occupied 8.05%, natural gas shared 0.33%, hydro-electric power provided 0.28%, geothermal, solar and wind power provided 0.02%, solar thermal provided 0.07% and nuclear power provided 8.31%.

The total amount of Taiwan's energy supply increased from 41.61 million kiloliters of oil equivalent in 1986 to 138.42 million kiloliters of oil equivalent in 2006, for an annual average growth rate of 6.2%.

Since Taiwan is not rich in land-based energy resources, the ratio of indigenous energy to total energy supply decreased from 10% in 1986 to 2% in 2006, while that of imported energy increased from 90% in 1986 to 98% in 2006. From 1986 to 2006, the structure of energy supply in Taiwan has changed as follows (figure 6.1):

1. Coal's share increased from 21% in 1986 to 32% in 2006
2. Petroleum decreased from 53% to 51%
3. Natural gas increased from 3% to 8%
4. Hydropower decreased from 5% to 2%
5. Nuclear power decreased from 16% to 7%

Coal was the main energy source before 1966 in Taiwan, but oil replaced it as the major energy source as of 1967. Since the second oil crisis, the government has advocated the substitution of coal and nuclear energy for oil. Expenditures for imported energy amounted to US\$33.64 billion in 2006, of which imported oil accounted for US\$26.17 billion, or 77.8%. Imported energy accounted for 16.6% of the total import value and 9.5% of the GDP in 2006,

⁸⁹ Ibid 6.

⁹⁰ Refer to Bureau of Energy, MOEA website:

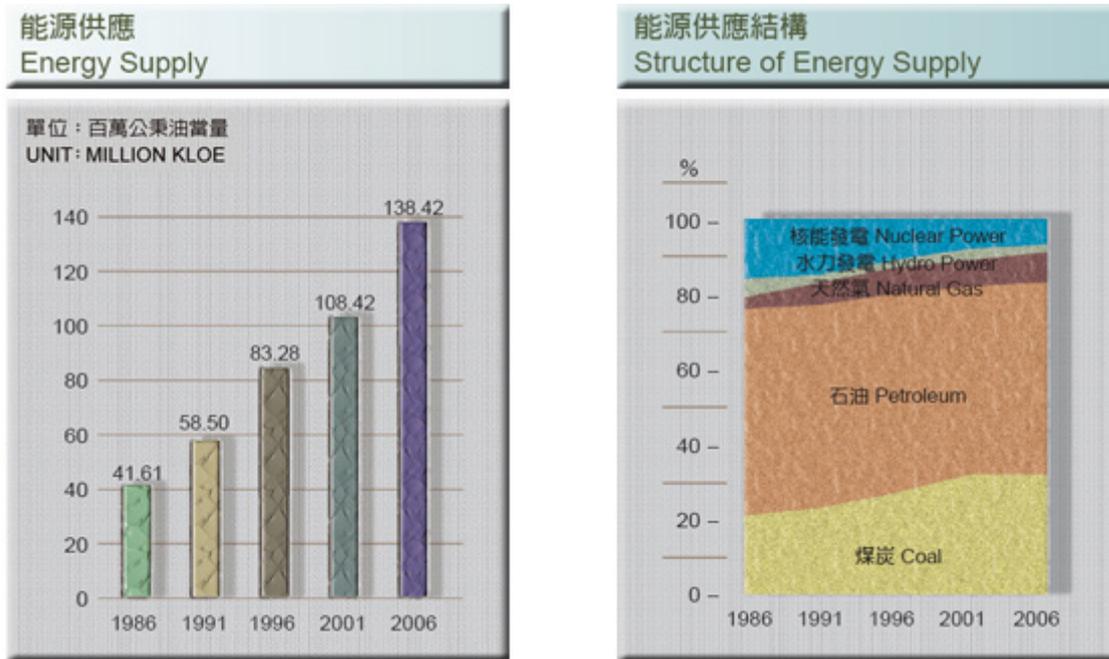
<http://web2.moeaboe.gov.tw/ecw/About/energy%20situation/main/index.html>

http://web2.moeaboe.gov.tw/ecw/About/energy%20situation/main/en_04.html(accessed on May 10th of 2008)

⁹¹ The import energy takes up 98% of Taiwan's total energy supply in 2007(refer to Bureau of Energy Ministry of Economic Affairs website <http://www.moeaboe.gov.tw/opengovinfo/Plan/all/WorkStatisticsAll.aspx>)

with an average per capita spending of NT\$48,175 for energy imports.

Figure 6.1: Energy Supply and Structure of Energy Supply



Source: Bureau of Energy, MOEA 2007

6.1.3. Energy Consumption in Taiwan⁹²

The trend of energy consumption in Taiwan increased from 37.73 million kiloliters of oil equivalent in 1986 to 109.75 million kiloliters of oil equivalent in 2006. The average annual energy consumption growth rate during this period was 5.5%. Energy demand elasticity was 0.74.

Per capita energy consumption increased from 1,949 liters of oil equivalent in 1986 to 4,826 liters of oil equivalent in 2006 for an annual average growth rate of 4.6%. The energy consumption structure in Taiwan from 1986 to 2006 changed as follows (figure 6.2):

1. By Consuming Sector

- Industrial sector dropped from 60% in 1986 to 58% in 2006
- Transportation sector increased from 14% to 15%

⁹² Refer to Bureau of Energy, MOEA website:

<http://web2.moeaboe.gov.tw/ecw/About/energy%20situation/main/index.html>

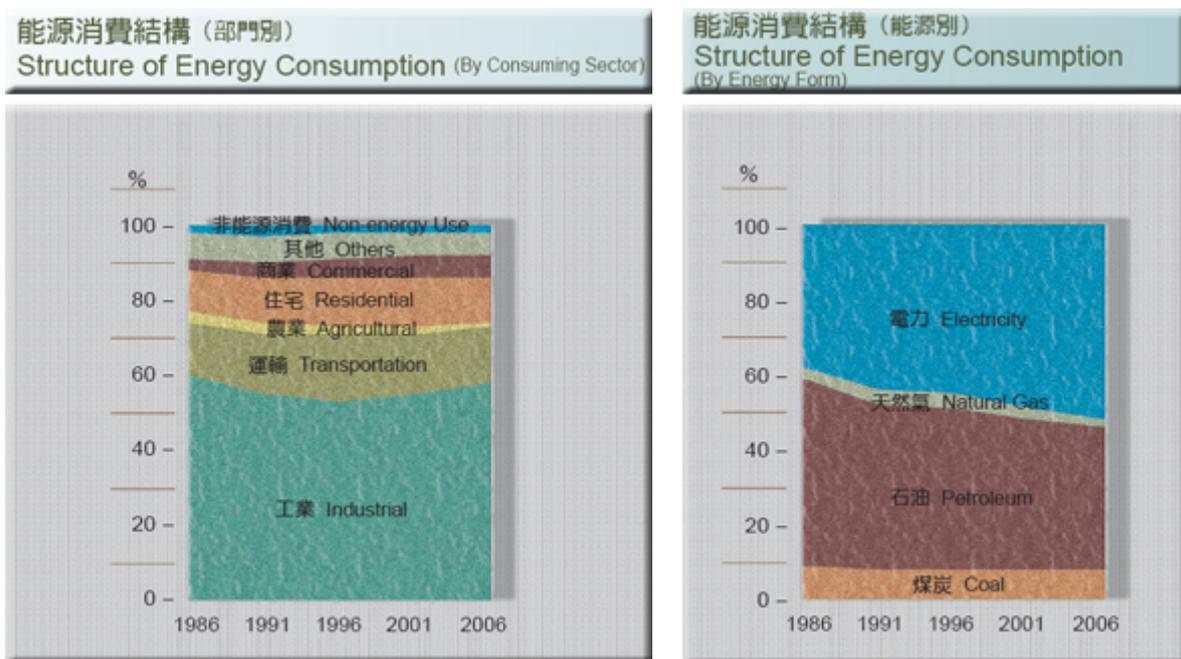
http://web2.moeaboe.gov.tw/ecw/About/energy%20situation/main/en_04.html(accessed on May 10th of 2008)

- Agricultural sector decreased from 3% to 1%
- Residential sector increased from 11% to 12%
- Commercial sector increased from 3% to 6%
- Others decreased from 7% to 6%
- Non-energy remained at 2%

2. By Energy Form

- Coal decreased from 9% to 8%
- Petroleum decreased from 50% to 38%
- Natural gas dropped from 3% to 2%
- Electricity increased from 38% to 52%

Figure 6.2 : Structure of Energy Consumption by Consuming Sector and Energy Form



Source: Bureau of Energy, MOEA 2007

6.1.4. Taiwan's GHG Emissions

Taiwan's GHG emissions inventories include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and hexafluoride

sulfur (SF₆). Their share of GHG emissions in 2007 is shown in table 6.1.

The CO₂ takes the major proportion of GHGs emissions in Taiwan. It contributed 88.9 % of total GHG emissions in 2007. The main source of CO₂ comes from the burning of fossil fuel from energy sector, mainly coal and petroleum. In 2006, coal contributed 32.4% of total energy supply in Taiwan; oil constituted 50.54%⁹³. According to the statistics of GHG emissions by sectors in 2006, energy and industry sectors accounted for about 70% of total emissions⁹⁴. In 2006, Taiwan emitted 265,276 thousand tonne carbon dioxide (from fuel combustion only), which is about 2.4 times of the 1990's CO₂ emissions (110,626 thousand tonne Carbon dioxide). The annually average growth rate from 1990 to 2006 is 5.62%, while the average annual economic growth rate was 6.3%. The emission trend is still not decoupled with economic growth.

Table 6.1: Taiwan's GHG Emissions Structure in 2007

Type of GHGs	GHG Emissions Share
Carbon Dioxide (CO ₂)	88.9%
Methane (CH ₄)	4.6%
Nitrous Oxide (N ₂ O)	3.4%
Hydrofluorocarbons (HFCs)	0.2%
Perfluorocarbons (PFCs)	1.2%
Hexafluoride sulfur (SF ₆)	1.7%

Source: Industrial Technology Research Institute, 2007⁹⁵

Compared with global CO₂ /Population in 2004, Taiwan's CO₂ /Population is 11.3 (t CO₂ /capita) which is the 18th country in the world. Compared with Global GHG emission (from fuel combustion) in 2004, Taiwan's CO₂ emissions (from fuel combustion) accounted for 1% of total global GHG emission. The emission volume made Taiwan ranked the 22nd GHG emissions country in the world⁹⁶.

A modest increase in CO₂ emission is acceptable considering the fact that Taiwan's

⁹³ Ibid 6.

⁹⁴ Refer to 能源局能源產業溫室氣體中心 website:<http://eigic.estc.tw/download/CO2.doc>

⁹⁵ Ibid 6.

⁹⁶ Refer to IEA/OECD, CO₂ Emissions from Fuel Combustion, 2006 Edition.

economy is still growing at a slower but steady pace. In order to promote sustainable development and to maintain abundant natural ecosystem in Taiwan, the government has started to address global warming problem by following measures and policies.

6.2. Institutional Framework for Addressing Global Warming

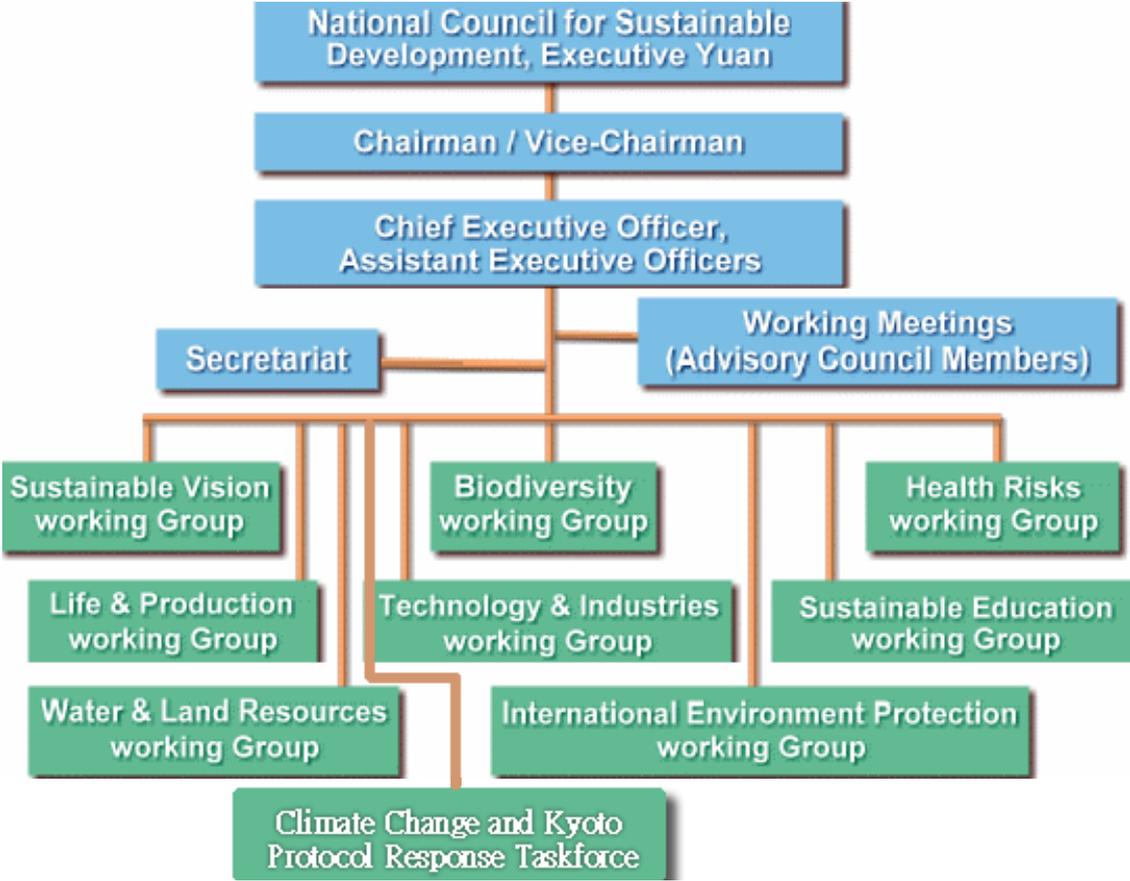
Addressing the global warming issue calls for an energy switch from fossil fuel based systems to renewable energy systems or other energy sources that do not lead to the emission of GHGs, as well as other measures such as reduced production of CFCs, modified consumption and waste disposal patterns as well as land use management aimed at capturing carbon from the atmosphere. The strategies to reduce GHG emissions include using cleaner energy sources and technologies, forest management, and accelerated and coordinated research programs. Adaptation strategies to cope with possible effects of climate change include developing emergency and disaster preparedness policies and programs, as well as coastal zone and river basin management plans for areas at risk from sea level rise and change in the hydrological cycle respectively (Gupta 1997). These measures imply a fundamental adjustment in energy policy, industrial structure and consumption systems of goods, etc. These measures are under jurisdiction of different government agencies. How can these related policies be coordinated in a good institutional framework?

6.2.1. Central Coordination

Global environmental issues always require the cooperation and involvement of different government agencies. The traditional way in which only one agency takes charge of all things cannot apply to global environmental issues. Therefore, the National Council for Sustainable development (NCSD) was designated to take charge of global warming issue as the institution promoting coordination and consensus building at the central government level. The NCSD has 25 to 31 council members, composed of ministers-without-portfolio, administrators of government agencies, experts and scholars, and representatives of civil groups. The council members are appointed by the NCSD Chairman upon the approval of the Executive Yuan with a term lasting for one year. Reappointment is possible upon the completion of a term. The NCSD has one chairman, the position to be concurrently held by the Premier; there is one vice-chairman, the position to be concurrently held by the Vice

Premier. Major functions and working groups of the NCSO are illustrated in Figure 6.3.

Figure 6.3: The National Council for Sustainable Development, Executive Yuan⁹⁷



Source: National council of sustainable development website (2008)

Within the NCSO framework, one mission of the international environmental protection working group is responsible for participation the UNFCCC, promoting international cooperation and compliance with international environmental law to establish a complementary domestic legal system. The EPA is its sponsoring agency. This Working Group is envisioned as acting as a coordinator amongst different ministries. Therefore, the Ministry of Economic Affairs (MOEA), the Ministry of Foreign Affairs (MOFA), the Committee of Agriculture (COA), the Ministry of Interior (MOI), and the Ministry of Transportation and Communication (MOTC) are assisting agencies to promote related works.

⁹⁷ Ibid 97.

Taiwan Sustainable Development Action Plan was approved in 2001. Under the action plan, the detail actions in response to the UNFCCC under this working group include⁹⁸:

1. Actively participate in UNFCCC related meetings and activities.
2. Keep track of international trends and provide corresponding strategies. Evaluate available channels for Taiwan to participate in multinational GHG reduction mechanisms.
3. Update greenhouse gas inventories and revise national communication.
4. Evaluate impacts and adaptation of climate change.
5. Plan strategies to reduce GHG emissions, and apply energy engineering and macro-economic models to evaluate reduction costs.
6. Establish a mechanism for major industries to carry out voluntary GHG reduction.
7. Establish indicators with reference to the UNFCCC for international comparison and carry out researches on comparative laws and regulations of different countries subject to the UNFCCC.

For addressing the global warming issues under one single specific department, the NCSD established the Climate Change and Kyoto Protocol Response Taskforce in Jan 2004 which is the only taskforce convened by the Premier under the NCSD⁹⁹. The EPA is its sponsoring agency as well, but the chief executive officer of the taskforce is the minister of the Research, Development and Evaluation Commission, Executive Yuan. Almost all ministries are its assistant agencies. Since that, works related to global warming issues are transferred to the Taskforce. On 11, Jan 2008, the Greenhouse Gas Reduction and Administration Office was established under the Bureau of Air quality Protection and Noise Control of the EPA to be responsible for relevant assistant work under the Taskforce. The office is also the only department which is singly responsible for assisting the Taskforce in strategy planning and evaluation, verification and registration GHG emission inventories, trade administration, as well as international cooperation in addressing GHG emission reduction.

⁹⁸ Refer to National council of sustainable development website:
<http://sta.epa.gov.tw/NSDN/download/nation.DOC> (accessed on May 10th of 2008)

⁹⁹ Refer to 2006 Environmental White Paper of ROC, website:
<http://www.epa.gov.tw/ch/DocList.aspx?unit=7&clsone=513&clstwo=158&clsthree=91&busin=2157&path=6488> (accessed on May 10th of 2008)

6.2.2 Government Agencies

Table 6.2 shows the present bureaucratic division of labor in implementing Taiwan's climate change policy under the Climate Change and Kyoto Protocol Response Taskforce.

Table 6.2 Government agencies and their functions in climate change

Central government	Function and authority
EPA	Strategy planning and integration, responsible for the Basic Environment Act (2002).
MOFA	Research and negotiation on International environmental law
Research, Development and Evaluation Commission, Executive Yuan (RDEC)	Evaluation of all the strategies and plans
MOEA	Responsible for Energy Administration Law, the draft of Renewable Energy Development Act. Energy structure adjustment, industry structure adjustment, industry sector emission baseline investigation and strategy planning.
Ministry of Interior	Residential and business sector emission baseline investigation and strategy planning.
Ministry of Transportation and Communications (MOTC)	Transportation sector emission baseline investigation and strategy planning.
COA, Executive Yuan	Strategy for agriculture emission and forest absorption
Ministry of Finance	Research tax incentive tools to help GHG emissions reduction
Council for Economic Planning and Development (CEPD)	Economic impact assessment and response
National Science Council (NSC)	Science research and technology innovation
Ministry of Education (MOE)	Issue propaganda and bringing into national education system

Source: EPA 2007

Led by the EPA, the MOFA and RDEC are responsible for strategy-planning and international negotiations. The MOEA, COA, MOI and MOTC manage adjustment strategies of different sectors. The MOF and CEPD are responsible for economic impact assessments and economic incentive-planning. Science research, education and propaganda are the preserve of the NSC and MOE.

Although a trans-agencies organization –the NCSD- has been established to coordinate related policies of different agencies under the Executive Yuan, the interview results (please refer to Table 6.3) reveal that government officers still have different points of view toward the central coordinated agency. Two officers from the MOEA thought that the EPA was the central coordinated agency. The researcher from ITRI adopted an issue approach to determine who was the central coordinated agency. He believes the EPA was responsible for GHG emission reduction implementation and the NCSD is responsible for strategy planning.

Table 6.3: Results of Interview Question 2

What is the central government agency in chare of coordinating global warming policy? The EPA (a government organization) or NCSD (still Taskforce, there is a Climate Change and Kyoto Protocol Response Taskforce under the NCSD)? or other agency?		
NCSD (CCKPRT)	EPA	Issue Approach
NCSD01, EPA01,EPA02	MOEA01, MOEA02	ITRI01

Source: this research

As Zuang (MOEA01) pointed out, the reason of discord between those government officers about the issue of a central coordinated agency is because the NCSD only has the authority to propose suggestions and make resolutions but has no responsibility for implementing related policies. Moreover, the central competent authority for major regulations on GHG reduction, such as the draft of Greenhouse Gas Reduction Act, is not the NCSD, but the EPA. Even though some interviewees thought that the NCSD should be the

central coordinated agency, they still emphasized its weakness. For example, the Taskforce under the NCSD can only play a limited role and does not operate regularly, so implementation work is still done by the EPA (EPA01). With the EPA as its sponsoring agency, the chief executive officer of the Taskforce is not the minister of the EPA, but the minister of RDEC. It is possible that discordant problem will happen during the policy implementation under the NCSD (NCSD01).

If the NCSD cannot play an efficient role in policy coordination and integration, it will gradually exist only in name. Although the Basic Environmental Act gives the NCSD legal status; in fact, it is still a mission council, not a legal organization under the Executive Yuan. The institutional framework toward addressing global environmental issues truly requires a complete review.

The draft of Executive Yuan Organization Act which was sent to the Legislative Yuan on February 20, 2008 planned to integrate some powers and functions related to environment and resources under the EPA, COA, MOI and MOEA to one single responsible ministry- the Ministry of the Environment and Resources (MOER). This organizational reform would be helpful to effectively and efficiently implement a national environmental preservation policy to address those global environmental issues (Yeh 1999). In fact, energy affairs are not designed to be assigned to the MOER's authority. If the MOER is not responsible for energy affairs, then its role to coordinate relevant global warming policies will not function well.

However, some scholars and NGO representatives suggested that the government should abandon its growth-oriented thinking and bring environmental protection and sustainable development into national development goals during National Meeting of Sustainable Development Affairs in 2006. Therefore, Chang (2006)¹⁰⁰ who is the Vice-President of the Taiwan Environment Protection Alliance proposed that the CEPD should be reorganized into the Council for Sustainable Development (CSD) so that government would not just focus on taking economic development as the only national development goal but would also focus on sustainable development considerations as well. Thus related issues, such as global warming (including mitigation GHG measures and adaptation strategies) could be managed by the CSD.

¹⁰⁰ Refer to Chang Zi-jian's foreword in the meeting of sustainable development affairs. (website: http://60.248.4.115/NCSD/category/ptlist_114839.htm ,http://60.248.4.115/NCSD/category/ptlist_114839.htm) (accessed on May 10th of 2008)

In addition, the interviewees also provided useful suggestions to improve institutional framework (please refer to Table 6.4).

Table 6.4 Results of Interview Question 4

Do you think a single responsible agency is required to implement a global warming policy? The single responsible agency could be a new institution, such as the Ministry of Environment and Resources or the Council for Economic Planning and Development reorganized into the Council for Sustainable Development or another government agency.				
CEPD (CSD)	NCSD	A Platform under present system	A Legal organization in the EY	EPA
EPA02.MOEA02,MOEA01	ITRI01	MOEA 01	EPA01	NCSD01

Source: this research

Three interviewees from the EPA and MOEA also agreed that the CEPD (reorganized as the Council for Sustainable Development) could be a good way to implement global warming related policies. With legal duties, independent manpower and budget, the CSD could operate more effectively. The most important is that the CSD could take a more balance consideration between economic growth and environmental protection in the policy-making process. Chou (EPA01) indicated that a legal organization within the Executive Yuan would be an effective arrangement as the Executive Yuan could directly order ministries and agencies to jointly implement related policies. According to Hu’s (ITRI01) observation, Parties of the UNFCCC have also appointed their EPA ministries to attend COPs, but major policies still need to be approved by their prime ministers. Therefore, He thought that the NCSD should already be the single responsible agency, because the Executive Yuan makes the final decision. Zhung (MOEA01) disagreed with establishing a single responsible agency. He thought that the only thing needed is a platform to coordinate different authorities among related ministries and agencies. He thought that the present labor division under the Executive Yuan already has the mechanism to implement global warming related policies. Thus for effective and efficient implementation, a platform at the central government level would be

helpful. According to the results of interview question 3 (Whether the central coordinate agency is the EPA or NCSD (CCKPRT); can the EPA play the role of policy coordination being that the EPA is also the Secretariat of the NCSD and CCKPRT?), all interviewees agreed that the EPA is powerless in its coordination efforts. It has been said that the EPA would function well after the Greenhouse Gas Reduction Act has been enacted (ITRI01). Some critics have said that the most important thing to determine the EPA's function is the attitude of the Premier (MOEA02, EPA02). If the Premier pays more attention to this issue and fully authorizes the EPA to take charge of the coordination work, then the EPA can function as a coordinator or a good assistant of the NCSD. Even though the EPA is weak among the central ministries, Shih (NCSD01) still pointed out that the EPA should have the ability to coordinate different authorities among ministries under the present system. In the draft of the GHG Reduction Act, the EPA is also designated to be the central competent government.

All of those proposals above provide possible solutions for a long-term problem- weak policy coordination of global warming issues. Under the present situation, the NCSD still has the aforementioned limitations and its function is highly dependent on the attitude of the prime minister. A Platform may not operate permanently. It seems impossible to establish a new legal organization in the Executive Yuan according to the draft of Executive Yuan Organization Act and the current political situation. The EPA should have the ability to coordinate different authorities among government ministries under the present system according to other countries' experiences, but the EPA is still a relatively weaker and smaller sector within the central bureaucracy. In my opinion, the CEPD (reorganized as the Council for Sustainable Development) could be a possible reform to eliminate institutional framework weakness and compromise a long-term unbalanced policy emphasis between economic growth and sustainable development in central government to coordinate and implement global warming policies.

6.2.3 Summary

The institutional framework for Taiwan's global warming policies still has the following weaknesses and limitations:

First, the legal status of the NCSD in the policy-making process is still ambiguous.

Almost all ministers are certainly members of the NCSD; moreover, the Premier is chairman, but all major resolutions still need approval of the Executive Yuan and other resolutions are passed to related agencies for implementation. The NCSD is only an advisory body, but its relationship to other central government policy-making agencies, such as the RDEC and CEPD still needs to be clearly defined.

Second, the NCSD is still a mission council, not a legal organization under the Executive Yuan¹⁰¹. Without legal duties, and sufficient budget and manpower, all its resources are from the EPA, not from the Executive Yuan. This status restrains its functioning regarding policy coordination and integration.

Third, some government agencies have yet to internalize all global environment issues into their organization mission. For example, the EPA did not put policies related to GHG reduction into their Environmental White Paper (2007 Edition)¹⁰².

Forth, the bureaucratic network is fragmented and lacks adhesive integration. Many GHG emission issues are under the jurisdiction of other governmental agencies, such as the MOEA, MOI and MOTC, etc. Although the EPA serves as an assistant agency in policy coordination and integration under the NCSD, it is a weaker and smaller sector within the central bureaucracy compared to other development agencies, such as the CEPD and MOEA, possessing very little authority to ‘order’ other government ministries to jointly implement related policy, not to mention to integrate related resources under different government agencies. Growth-oriented national development strategy in the past fifty years may explain this outcome.

Fifth, several ministries conduct and compile their own investigation and policies on emissions reduction. The central government lacks a system to incorporate all the GHG reduction information from different ministries and develop systematic policies to provide useful and effective information for policy-makers.

The institutional framework for addressing global environmental issues is in dire need of an overall reform. The CEPD (reorganized as the Council for Sustainable Development)

¹⁰¹ The NCSD is not a legal organization under the Executive Yuan.(Refer to Executive Yuan website: <http://www.ey.gov.tw/ct.asp?xItem=4112&ctNode=978&mp=1>) (accessed on May 10th of 2008)

¹⁰² The Environmental White Paper incorporated the implementation status regarding goals, strategy and measures that are stated in the “National Environmental Protection Plan” carried out since 1999, as well as covered not only pollution prevention and control, but also nature conservation and international trends.

would be a useful way to improve institutional framework weakness.

6.3. Legal Framework for Addressing Global Warming

There are four parts to constitute Taiwan's climate change regulatory regime: the Constitution, the Basic Environmental Act, the draft of the Greenhouse Gas Reduction Act and other related laws.

6.3.1. The Constitution

After 1949, the national development pattern adopted by the nationalist government is growth-oriented development copied from western industrial countries. Therefore, economic growth and science development is the core value in the Constitution. However, in the early 1990s, political liberalization along with social conflicts about resource allocation created a constitutional mechanism that could balance competing interests between the environment and development (Yeh 1994, Yeh 1999). In the second round of constitutional revision in 1993, a compromise was reached in an amendment to the Constitution that proclaims that scientific, technological and economic development should go in tandem with environmental protection and ecological conservation in the cause of national development¹⁰³. As Yeh (1996) pointed out:

The “ in tandem clause” as enacted in the Constitution should be read to imply the constitutional entrenchment of a procedural requirement for balancing development and the environment to attain sustainable development.

Under the principles of the Constitution, any national development policy should take environmental protection and ecological conservation into simultaneous consideration. According to the spirit of the Constitution, when Taiwan pursues economic growth, the share of international obligation to protect global environments and conserve local ecological systems should be considered in the policy-making process at the same time.

6.3.2. Basic Environment Act

Basic Environment Act which was promulgated on 2002 could be the most important

¹⁰³ First amendment is on ROC CONST. Art,9(2)(promulgated May 28,1992), now is in ROC CONST. art. 10(2) (promulgated on 10 June, 2005).

achievement in environmental legislation in recent year. A framework-type of legislation was adopted to give principles and guidelines for related environmental protection regulations and decrees. According to its Article 1, this Act has priority to be applied, so regulations of other laws only apply to those matters not regulated by this Act. In addition, the Act also regulates authorities and functions for central and local governments to implement and adjust their policies to raise the quality of the environment, advance the health and well-being of the public, preserve environmental resources, and pursue sustainable development by promoting environmental protection¹⁰⁴.

There are two characteristics in the Basic Environment Act. One is bringing in legislative principal of environmental law, such as Polluter-Pay Principle (Article 4.2, 28), Cooperation Principle (Article 4.1), Precautionary Principle (Article 27), Public Participation Principle (Article 11) and Information Disclosure Principle (Article 15). The other is aligning with international environmental law, such as sustainable development (Article 2.2, 8, 9, 29), international cooperation and technology assistance (Article 12), biodiversity (Article 18), carbon dioxide emissions control (Article 21) and environmental impact assessment (Article 24).

Under the Basic Environment Act, it again reiterates that economic, technological and social development shall equally emphasize environmental protection based on long-term national interests. Moreover, compared with the Constitution of ROC, it further stresses that environment protection shall have priority when economic, technological or social development has a seriously negative impact on the environment or there is concern of endangering the environment (Article 3).

In response to the global warming problem, the Act was the first regulation in Taiwan to declare that Government entities at all levels shall actively adopt measures to control carbon dioxide emissions and establish related plans to mitigate the greenhouse effect (Article 21).

6.3.3 Promotion Legislation of the Greenhouse Gas Reduction Act

Based on the resolution of the 1998 National Energy Conference, the EPA has proposed a draft-Greenhouse Gas Reduction Act, the first environmental legislation to mandate the GHG emissions reduction to address climate change issue. Among non-Annex I Parties, there

¹⁰⁴ Article 1 of the Basic environment Act

is no a Party which has GHG reduction regulations and sets up GHG reduction target. In Annex I Parties, Only three Parties of the UNFCCC have regulations to address the global warming issues. The European Union only has the GHG Emission Trading Direction. (For details please refer to table 6.5 following).

As a non-Party, Taiwan’s promotion of Greenhouse Gas Reduction Act legislation can not only demonstrate to international society their strong willingness to combat global warming but will also provide a regulatory regime for domestic implementation. In addition, the legal process of the Act can provide a channel for legislative and administrative sectors to participate in policy-making to address relevant issues¹⁰⁵.

Table 6.5. Major nations’ GHG reduction regulations

Nation	Regulation	Main content
European Union	European Union GHGs Emission Trading Direction (promulgated in 2005)	Establishing emission trading system
Japan	Global Warming Strategy Promotion Law (promulgated in 1998, revised in 2002)	Regulating central and local authority, and clarifying labor division between governments
Switzerland	Federal Law on the Reduction of Carbon Dioxide Emissions (promulgated in 2000)	Regulating energy, transportation, environment and finance policy, voluntarily reduction measures, as well as Carbon tax.
New Zealand	Climate Change Strategy Act (promulgated in 2002, revised in 2006)	Regulating the implementation and verification of emission trading, establishing registration system and national communication administration.

Source: EPA (2008), Yeh (2000)

Taiwan has adopted a framework legislation to flexibly manage problems with a high level of uncertainty. The main characteristic of the framework legislation is providing

¹⁰⁵ Ibid 58.

minimum regulations for control models, implementation tools and procedural mechanism. According to the draft, the Act establishes a framework to regulate responsibilities of government agencies and GHG emission reduction strategies based on emission efficiencies and new-source emissions, as well as penalties for non-compliance.

The draft, consisting of six chapters with 28 articles (Appendix III in Mandarin), clearly defines GHGs to include: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexa fluoride (SF₆) gases. Key elements in the draft are outlined as follows¹⁰⁶:

Responsibilities of government agencies: If the GHG reduction measures involve relevant responsibilities of government agencies, the Executive Yuan shall convene relevant central agencies to develop and review the task assignment, integration, and promotion of emission reduction measures. The central competent authority shall develop GHG emission reduction plan and implement it after approval by the Executive Yuan; the central competent authorities on different sectors shall develop and implement the reduction targets and action plans based on the plan.

Reduction strategies: In accordance with the decisions of the UNFCCC, the Kyoto Protocol and related meetings, the central competent authority shall promulgate the national GHG emissions cap, which will be implemented by setting reduction targets in stages. The amount of GHG emissions reduction shall be assigned to industry competent authorities, which shall develop the reduction plans accordingly. Based on the allocated GHG emissions, central industry competent authorities shall promulgate the emissions allocation to the enterprises with declared emissions source in different stages. Reserve part of the allocation will leave for new or modified emission sources of designated level, and require the new or modified enterprises to adopt the best available technologies. Enterprises with allocated emissions shall implement emission reduction measures or conduct trading in the trading platform designated by the central competent authority. New or modified emission sources shall obtain offsets for any emissions exceeding the allocation by the central industry competent authorities.

Education and Promotion: All levels of government agencies shall strengthen education of schools, enterprises and the public on GHG reduction. Government agencies, public

¹⁰⁶ Ibid 6.

schools and state-owned enterprises shall promote energy conservation and adoption of high-energy efficiency products or services.

Penal Provisions: Enterprises or verification/ certification institutions shall be penalized for non-compliance with the Act.

The draft has undergone several deliberations in the Executive Yuan. On 20, Sep 2006, the Executive Yuan finally passed the draft, which was then immediately submitted to the Legislative Yuan on 26, Sep 2006. The draft was not passed during the sessions of the Sixth Legislative Yuan. Therefore, the draft has been submitted again to the seventh Legislative Yuan on 4, Feb 2008 again¹⁰⁷.

6.3.4 Other Relevant Laws¹⁰⁸

Besides the Constitution of the ROC and Basic Environmental Act, and the GHG Reduction Act, other relevant laws and regulations which need to be reviewed and to be proposed in the face of new international environmental norms includes energy-related regulations, environmental regulations, and other relevant economic regulations, such as those relating to the promotion of direct investment and subsidies.

In energy related regulation, the revision draft of Energy Administration law which was again sent to Legislative Yuan on March 14, 2008¹⁰⁹ plans to enhance the control of energy efficiency by monitoring big energy user, posing obligation for manufacturers and supplier to label the energy consumption volume and energy efficiency on their products¹¹⁰. Besides, the draft of Renewable Energy Development Act was again sent to Legislative Yuan on March 14 2008¹¹¹. The draft was aimed at increasing domestic energy supply, developing domestic energy potentials, decreasing energy imports, reducing GHG emissions, and actively

¹⁰⁷ According to Article 13 of the Legislative Yuan Exertion of Authority Act, when the legislators' term comes to an end, all the bills, except the budgetary (final account) bills and the petition bills that have not been resolved upon, shall not be continued in the next Legislative Yuan. If the Executive Yuan wants those bills to be reviewed again, those bills have to be submitted again. The members of the seventh Legislative Yuan were elected in Jan 2008.

¹⁰⁸ More information can refer to Yeh (1999), Global Environmental Issues-Taiwan's viewpoint, Taipei (in Mandarin)

¹⁰⁹ Ibid 107.

¹¹⁰ The revision draft of Energy Administration law, article 8,11,14,15,16.

¹¹¹ The draft was passed by the Executive Yuan on August 6, 2005, and sent to the legislative Yuan in 2005. It did not pass during the sessions of the Sixth Legislative Yuan. It was sent to the legislative Yuan again during the seventh legislative Yuan. Ibid 107.

promoting domestic renewable energy through incentive programs. The major elements of the Act include: government's guaranteed purchase of electricity generated by renewable energy at the price of NT\$2.2 per kilowatt for 20 years, the purchase of electricity for off-shore power plants at NT\$2.9, and raising the ratio of renewable energy electricity generation capacity to 10% by 2010¹¹².

In environmental regulations, during the 1998 National Energy Conference, one resolution has been made to take potential CO₂ emissions into consideration when conducting environmental impact assessment for major development projects. However, the corresponding amendment to the Environmental Impact Assessment Act is yet to be proposed.

In economic incentive regulations, the Statute of Upgrading Industries has already provided tax breaks for a company which invests in technology and equipment on clean energy, saving energy, reducing GHG emission or enhancing energy efficiency¹¹³, but it still lacks enough incentives to guide those high energy consumption, high GHG emission industries to upgrade or transfer to low energy consumption, or less GHG emission industries. Powerful legal adjustments are needed to revoke some unsuitable subsidies and other improper resource allocations, such as tax reductions and exemptions, as well as low price energy policy. For rationalization the energy price, promotion energy saving, and reduction Carbon Dioxide emission, the draft of the Energy Tax Act plans to levy a tax on energy. The first version was proposed by 130 legislators of the sixth Legislative Yuan, but it was not passed during the sixth Legislative Yuan. The other version proposed by the Executive Yuan was sent back from the Executive Yuan to Ministry of Finance¹¹⁴ to leave new government to review again. Therefore, the economic incentive tool to impose energy tax is still undecided.

6.3.5 Summary

There were a lot of legislations and related decrees needed to be reviewed. How can those relevant regulations be reviewed in a more efficient way? In my interview question 7, four of my interviewees (EPA01, NCSD01, EPA02 and ITRI01) thought relevant regulations

¹¹² Ibid 6.

¹¹³ The Statue of Upgrading Industries, Article 6 (1).

¹¹⁴ The author checked with the officer of Ministry of Finance by telephone on 14 May 2008.

have to be reviewed together, but it is hard in practice due to political reasons (such as combat between political parties in the Legislative Yuan). Two interviewees from the MOEA (MOEA01 and MOEA02) agreed that those regulations could be reviewed separately according to similar policy tools. All relevant regulations have to be reviewed by the Executive Yuan before sending into the Legislative Yuan. Chen (MOEA02) specially pointed out that if those relevant regulations can be reviewed under one minister-without-portfolio, the minister-without-portfolio could coordinate those regulations to prevent discordance in policy implementation.

The ‘packaging legislation’¹¹⁵ strategy can be adopted by the Executive Yuan to put all related regulations under the GHG reduction policy in one package bill and send it to the Legislative Yuan to be review at the same time. The strategy can ensure that all the related regulations can take effect at the same time to prevent polices discordance. Besides, it also can urge all related government agencies to review their own regulations as soon as possible.

6.4 GHG Reduction Policy

The ultimate objective of the government is to accede to the UNFCCC, so voluntarily compliance with the obligations of the Convention is the long-term implementation strategy. As to the short- and medium-term implementation strategies will depend on the latest development of the UNFCCC. Before the Kyoto Protocol was adopted in 1997, the short-term implementation strategy for the government seemed to be the compilation of Taiwan’s National Communication, which was the only substantive treaty obligation under the UNFCCC for all Parties at the time. The government finally finished the National Communication on January 2001. However, the National Communication eventually cannot be sent to the UNFCCC due to Taiwan’s non-Party status. After 1997, the government drove its attention to the substantive commitments of emissions reduction, especially the possibility to participate the flexible implementation mechanism prescribed by the Kyoto Protocol and the preparation for potential commitments of emissions reduction (Shih 2001).

6.4.1 National Energy Meeting

¹¹⁵ Refer to 羅傳賢 (2002), *立法程序與技術*, 台北,五南出版社(P383)。

6.4.1.1 1998 National Energy Meeting¹¹⁶

After the Kyoto protocol was adopted in 1997, the government held the National Energy Meeting in 1998 to address GHG emission reduction issues. How to give full and equal consideration of economic growth, energy supply and environment protection to adjust the energy policy was central issue in the meeting. The goal of achieving sustainable development along with strategies to address the latest development under the UNFCCC and the Kyoto Protocol were also discussed in the meeting. A provisional target was adopted to reduce CO₂ emission to the 2000 emission level by 2020 before accurate evaluation was made. Principles for responding to the UNFCCC were also prescribed in the meeting as followed¹¹⁷:

1. The United Nations has already concluded and signed the UNFCCC and drawn up the Kyoto Protocol. Though not a member of the UN, as a member of the global community, Taiwan hopes to improve environmental protection and achieve sustainable development and hence should actively advance various “no regret” measures and further raise national competitiveness.
2. Taiwan’s industrial sector is currently undergoing a stage of rapid structural adjustment. Taiwan should make every effort to develop to be a Newly industrialized Nation. On the condition of being no negative impact on economic development prospects, Taiwan should shoulder responsibilities following from the Convention’s four principles.
 - (1) The Parties should shoulder common but differentiated responsibilities.
 - (2) The specific needs and special circumstances of Parties should be given full consideration.
 - (3) Policies to counter climate change should be economically effective and costs should be kept as low as possible.
 - (4) The Parties have the right to promote sustainable development.
3. Baselines and projections for greenhouse gas emissions should give full consideration to the relationship with the economy, environment and energy resources; a model analysis of economic growth and cost reduction should also be set up.

¹¹⁶ Refer to 我國因應氣候變化綱要公約資訊網 <http://www.tri.org.tw/unfccc/main04.htm>(accessed on May 10th of 2008)

¹¹⁷ Refer to National Communication of R.O.C. (Taiwan) English version in EPA website: <http://www.epa.gov.tw/ch/DocList.aspx?unit=13&clsone=476&clstwo=0&clsthree=0&busin=228&path=3715> (accessed on May 10th of 2008)

4. Increases in carbon dioxide emission should be taken into account in environmental impact assessments of major development projects.
5. Taiwan will push ahead with an energy-economizing project with a “no regret” strategy.

6.4.1.2 2005 National Energy Meeting¹¹⁸

The 2005 National Energy Meeting aimed at drawing out CO₂ reduction target, reduction timetable and strategies of related sectors. The conclusions made in the meeting were later approved by the Executive Yuan and are summarized as follows.

1. Reduction Strategies: Progressively building national reduction emission ability to plan national reduction schedule and go for participating in the next stage negotiation in the post-Kyoto period under the UNFCCC.

Reduction responsibility will focus on the emissions from net energy consumption and affordable emission reduction. Encouraging voluntary reduction and building reduction ability among different sectors, promoting reduction control, cap and trade, and CO₂ tax measures in suitable timing are goals in the present stage. Hopefully, we can ease the emissions growth and per capita CO₂ emission to the level of OECD countries.

2. Setting GHG reduction target

The target was plan to reduce about 17 thousand tonne carbon dioxide emissions compared with expected volume by 2025 through increasing the use of clean energy such as natural gas, developing renewable energy, increasing energy efficiency among industry, transportation and residential sectors, and building market mechanism to promote reasonable energy price. The target didn't reach a consensus in the meeting and will be left to be further discussed in National Meeting for Sustainable Development Affairs in the next year (2006).

3. Building administration mechanism

- (1) Enacting Greenhouse Gas Reduction Act to give the legal foundation to GHG emission reduction measures.
- (2) Building CO₂ emission control mechanism before drawing up new investment

¹¹⁸ Refer to Bureau of Energy, MOEA website: http://210.69.152.10/Policy/EnergyMeeting/conclusion_1.htm (accessed on May 10th of 2008)

project.

- (3) Establishing CO₂ verification, registration and coordination system among different sectors.

4. Assessing macro-economy impact to provide suitable adaptation policy

6.4.2 2006 National Meeting for Sustainable Development Affairs¹¹⁹

GHG reduction target and strategy was one of important issues among the meeting. After two days discussion, the conclusions were passed to related ministries to implement. The conclusions include:

1. Setting up one single institution under Executive Yuan to manage the response of climate change, drawing up action plan of GHG reduction among different sectors and promoting related works. Promotion programs are as follow:
 - (1) Promoting the legislation of Green House Gas Reduction Act.
 - (2) Enhancing international cooperation and promoting joint implement across broader.
 - (3) Establishing examination technology and verification platform to urge and encourage industries, energy sector to comply with.
 - (4) After establishing volume control and emission trading system, the MOEA have to use feasible evaluation and cost-benefit analysis to take emission reduction and getting emission credit by trading into consideration before passing any investment project.
 - (5) Setting GHG emission review principle in Environmental Impact Assessment mechanism.
2. Setting up national GHG reduction policy and target timetable
 - (1) Important disputes should be opened to be debated.
 - (2) The Executive Yuan should declare reduction target and timetable as soon as possible.
 - (3) Before setting up GHG reduction target and timetable, major investments such as CPC plan for petrochemical park in Yunlin and Formosa Plastics Group plan' for largest private steel project, should not be approved and passed.
 - (4) Levying CO₂ tax and tax on pollutant source before 2008 or within 3 years after legislation of Greenhouse Gas Reduction Act.
 - (5) Bringing emission credit trading system into practice before 2008 or within 3 years after

¹¹⁹ Refer to EPA website: <http://sta.epa.gov.tw/nsda/index.html> (accessed on May 10th of 2008)

legislation of Greenhouse Gas Reduction Act.

- (6) Supporting nuclear-free homeland policy- not using nuclear energy as reduction measure.
3. Enlargement public participation on energy saving and GHG emission reduction as well as holding education training and energy saving propaganda.
 - (1) Setting up “no regret” reduction plan in public sectors.
 - (2) Examining energy use efficiency in public sectors and urging public sector to purchase high energy efficient products.
 4. Promoting overall energy saving and energy use efficiency upgrading.
 - (1) Regular review energy price to reflect reasonable environmental and social cost.
 - (2) Gradually restraining energy consumption growth by setting target year by year.
 - (3) Compelling improvement on low energy use efficiency by legislation, such as Energy Saving Act.
 - (4) Actively making energy saving program to set up goal and control point, and adjustment energy structure under sustainable development principle.
 - (5) Bring CO₂ emission volume into examination indicator.
 5. All-out promoting research and use of green energy.
 - (1) Finishing the legislation of Renewable Energy Development Act as soon as possible.
 - (2) Affirming renewable energy industry as priority industry to develop.
 - (3) Actively assistance the development of domestic renewable and new energy industry.
 - (4) Renewable energy ratio in energy supply should take account of usage volume or actual electric power generation, not installed capacity.
 - (5) No increase in the ratio of coal in energy supply in electricity sector after 2005.

6.4.3 Economic and Industrial Policy- Big investment, Big warmth¹²⁰

The socio-economic environment at home and abroad has changed rapidly since 2001, with globalization intensifying international competition, as well as Taiwan having to face the problems of an aging population and a low birth rate. To address these challenges and act upon the conclusions of the “Conference on Sustaining Taiwan’s Economic

¹²⁰ Refer to Council of economic planning and development website:
<http://www.cepd.gov.tw/m1.aspx?sNo=0000169&key=&ex=%20&ic=&cd=> (accessed on May 10th of 2008)

Development”(COSTED), the Executive Yuan has formulated the “Economic Development Vision for 2015”and mapped out its “First-Stage Three-Year Sprint Program” for 2007~2009. This initiative involves the re-examination and adjustment of socio-economic systems and development directions, and with the aim of advancing toward a “prosperous, just, sustainable and beautiful Taiwan” in 2015 as the new vision and target of efforts for national development. The plan was approved by the Executive Yuan in 2006. The plan’s core theme is “Big investment, Big warmth.” Five separate packages of measures, for industrial development, financial markets, industrial manpower, public construction, and social welfare, will be implemented on a stage-by-stage basis.

In the first-stage three-year program, the industrial development package’s planning concepts include: promoting high-value output in all industries, upgrading industries across the board, promoting Taiwan brands, creating profit via product differentiation, integrating manufacture and service sectors, boost industrial capacity, improving energy efficiency, pursuing a win-win-win situation for energy, industry, and environmental protection, emphasizing social justice and balancing industrial development. Under the packages, there are two flagship plans which are building a superior investment environment and initiating a new era in industrial development.

The concrete action strategies for building a superior investment environment are as follow: providing land on preferential terms, ensuring an ample labor supply, providing funding assistance, improving the efficiency of the environmental impact assessment (EIA) process, establishing mechanisms for encouraging business investment. Development of emerging industries, industrial upgrading and transformation, balanced industrial development are concrete action strategies for initiating a new era in industrial development.

The industrial development package tries to bring GHG emission reduction into consideration by improving energy efficiency and energy intensiveness. The only action strategy is replacement and upgrading of facilities and equipment of basic industries, such as the improvement of Chinese Petroleum Corp.’s refining structure and upgrading of its 3rd naphtha cracker, and upgrading the facilities at China Steel.

Did recent national economic policy “Big Investment, Big Warmth” take global warming (GHG emission reduction) into consideration (Interview question 6)? Three of my interviewees (EPA01, EPA02, NCSD01) thought that “Big Investment, Big Warmth” did not

take global warming issue into consideration because the policy still promotes high CO₂ emission industries. However, Zhuang (MOEA01) said that industrial policy should consider Taiwan's status in the global labor division, and "Big Investment, Big Warmth" did take account of global warming issue by improving energy efficiency considering Taiwan's special industrial status in the global labor division. Chen (MOEA02) also pointed out that the goal of "Big investment, Big Warmth" cannot reduce CO₂ emission, but can only decrease emission intensity. He further mentioned that the only way to reduce GHG emission is the adjustment of energy structure. Under the present situation, most energy supply in Taiwan is from abroad and nuclear free homeland policy is still supported by the DPP ruling party. The adjustment of the energy structure has a long way to go. Economic and industrial policy is highly related to the outcome of GHG emission reduction. This case shows that government still does not take seriously the most important economic policy to effectively address the global warming issue as high GHG emission industries such as the steel and petrochemical industries are still promoted in the policy. Thus poor implementation on GHG emission reduction is imaginable.

6.4.4 Recent Development of GHG Policy¹²¹

Now the present strategy to implement the GHG reduction policy is under the direction of the Climate Change and Kyoto Protocol Response Taskforce of the NCSD. The EPA is responsible for coordinated work between different ministries. The implement strategies include:

- (1) Promoting legislation of GHG Reduction Act and related Energy Acts.
- (2) Establishing an integrated platform of industrial GHG and voluntary reduction registration.
- (3) Intensifying energy efficiency control and eliminating low energy efficiency industry and equipment.
- (4) Enhancing research for energy technology.
- (5) Evaluating major industrial investments.

¹²¹ Refer to Chea-Yuan Young(楊之遠博士 Director General, Department of Air Quality Protection and Noise Control Environmental Protection Administration, Executive Yuan)(2007) " International Movement and Strategies in Greenhouse Gas Mitigation " in The 5th Taipei International Digital Earth Symposium TIDES 2007, Taiwan. <http://deconf.pccu.edu.tw/2007/PPT/Young.pdf>(accessed on May 10th of 2008)

- (6) Increasing international participation and cooperation.
- (7) Assessing Climate change impact and making adaptation strategy.
- (8) Promoting overall campaign on CO₂ reduction and energy saving.

6.4.5 Summary

After the Kyoto Protocol was adopted in 1997, the government began to pay attention to the latest development of the Protocol. However, from the Nationalist government to the DPP government (1998 and 2004 National Energy Meetings, 2006 National Meeting for Sustainable Development Affair), there seems no a national guideline that can help coordinate the different interests between economic growth and sustainable development (environmental protection) to address the nationwide global warming issue. In interview question 5, three interviewees (EPA01, EPA02, and NCSD01) also agreed that there are no national guidelines to direct how to implement global warming policy. However, Zhung (MOEA01), Chen (MOEA02), and Hu (ITRI01) concurred that the conclusions made at the 2005 National Energy Meeting were the guidelines for ministries under the Executive Yuan to implement related work. In fact, the conclusions were more like concrete action plan, not superior guidelines about how to address interest conflicts among different ministries when they implement the GHG reduction policies. Although Article five of the draft of the GHG reduction Act has already prescribed that the Executive Yuan has to convene central related agencies, experts and scholars to draw up guidelines about labor division, policy integration and promotion among central government, the guidelines can be made immediately under present regulations and need not wait until the Act is passed.

The GHG reduction targets are a highly controversial issue in international and domestic negotiation process. Taiwan could not set its targets during the two National Energy Meetings and 2006 National Meeting on Sustainable Development Affairs, or even in the review process of the draft of the GHG Reduction Act in the Sixth Legislative Yuan. Currently, the draft in the Seventh Legislative Yuan still does not contain reference to the GHG reduction targets and timetable. One of the main reasons is that there are still different opinions existing in economic and environment agencies in central government¹²². The

¹²² Refer to Libertytimes website: <http://www.libertytimes.com.tw/2007/new/may/25/today-e2.htm>(accessed on May 10th of 2008)

minister of the MOEA publicly stated that setting reduction targets in law would be definitely influence employment opportunities and enterprises' investment considerations, as well as forcing industrial to move out. However, an EPA representative pointed out that not setting reduction targets would also influence investment willingness due to risk uncertainty. GHG mitigation can only be implemented gradually, so the EPA is afraid that it will be too late to set up reduction targets when international obligations are imposed on Taiwan. Interviewees also provided possible reasons that Taiwan cannot set GHG reduction targets and timetable (see table 6.6).

Table 6.6 Results of Interview Question 8

In your opinion, what is the main reason that Taiwan could not set GHG reduction targets and timetable during two Energy Meetings, National Meeting of Sustainable Development and the review of the Greenhouse Gas Reduction Act in the sixth Legislative Yuan?			
The attitude of the Ruling Party	Uncertain costs on economic impact	Different interest conflicts (including opposition from the industrial sector)	There is consensus among public sector (conclusions of 2005 National Energy Meeting)
NCSD01	ITRI01, EPA02	MOEA02, NCSD01	EPA01, MOEA02,

Source: this research

According to the interview result, the attitude of the ruling party, uncertain costs on economic impact, and different interest conflicts (including opposition from the industrial sector) all contribute to the outcome that Taiwan cannot set reduction targets and timetable. However, Chou (EPA01) and Chen (MOEA02) indicated that there is a consensus on GHG reduction targets and timetable- that is, the conclusions made at the 2005 National Energy Meeting. In fact, every ministry and agency followed the conclusions to implement related policy. However, in my opinion, there are no reduction targets and timetable in Taiwan. One reason is that the conclusions made in the 2005 National Energy Meeting did not declare clear reduction targets and timetable. The second reason is that the conclusions were only about

policy-making processes and were not converted into relevant regulations. Without prescribing regulations or decrees, it is hard to request people in every sector (including public and private sectors) to implement related measures to reduce GHG emission.

Although there may be some disagreements about the content of GHG reduction targets and timetable among those interviewees, they all agreed that Taiwan should set its own targets and timetable. Before setting the target and timetable, there are two disputes that need to be clarified. One is whether the target and timetable should be prescribed in law or should government agency be authorized to make decisions. The other is how to set targets and timetable to compromise all different interests.

The former has already been debated for a long time between the private and public sectors. My interview result (refer to table 6.7) also indicted the situation.

Table 6.7 Results of Interview Question 9

In your opinion, do you agree with the setting up of GHG reduction targets and timetable? If yes, do you agree for it to be prescribed in law or a government agency authorized to make decision? Why?		
No need to set targets	Need to set targets and timetable	
ITRI01	In law	Government agency be authorized to make decision
	NCSD 01	MOEA02, MOEA02, EPA01, EPA02

Source: This research

Hu (ITRI01) pointed out that the targets and timetable are made through international negotiation processes. Taiwan should keep the counter (the targets and timetable) for future international negotiation. Shih (NCSD01) thought that if setting the targets and timetable would influence people’s right, the targets and timetable should be prescribed in law. For easing the economic impact, she proposed that big and rough targets and timetable could be made in law, but detailed implementation plans in different stages could be designated to government agencies to map out. All government officers (MOEA02, MOEA02, EPA01, EPA02) agreed that the targets and timetable had better be authorized by law to government agency to make overall decisions. Chou (EPA01) further pointed out that there should be more flexible to adjust targets in accordance with the domestic economic situation. Huang

(EPA 02) suggested that setting two-stage targets can decrease the risk for enterprise's investment decision. In the first stage (where no international regulations are imposed on the NICs), reduction targets can focus on increasing energy efficiency. After the UNFCCC imposes reduction obligation on the NICs, then, the concrete targets will have to be made to fulfill Taiwan's obligation. The reduction targets and timetable are highly controversial and will more or less influence people's right. Furthermore, there are no non-Annex I countries which have set GHG reduction targets and timetable. This research agrees with the suggestion to adopt an eclectic way similar to that proposed by Professor Shih. The government should at least set up a big and rough target and timetable in law to show their determination to implement GHG emission reduction and detailed regulations can be authorized to government agencies to draw up. Then, the later dispute can be solved by openly discussing and negotiating the target and timetable in the Legislative Yuan to find a compromise between all interests.

Compared to international development (for example, COP13 has already begun to discuss next stage emission targets in the post-Kyoto period), how should Taiwan face new upcoming reduction targets in the post-Kyoto period (Interview question 10)? Without being a Party of the UNFCCC, Taiwan could not participate either in the Kyoto Protocol negotiation or in future negotiations. Thus it is difficult for Taiwan to negotiate a suitable commitment with international society. Huang (EPA02) also pointed out that post –Kyoto negotiations still focus on the responsibilities of Annex I Parties, not newly industrialized countries. Considering Taiwan's economic structure, Taiwan should adopt a flexible strategy to follow the established schedule and continue to pay attention to the latest international development. All interviewees (MOEA02, MOEA02, EPA01, EPA02, NCSD01, ITRI01) agreed that Taiwan should continue keeping up the pace with preparing work related to GHG reductions. Therefore, Taiwan will have the ability to deal with the upcoming commitments and obligations that will be imposed by international society.